

of scientific attainments having a technical knowledge of forestry. This amendment was rejected on a vote, but Sir Philip persisted with it in the Report stage, which followed immediately after Committee was over, and it was then accepted and added to the Bill. He also put forward an amendment, which was accepted, that the Commissioners should have power, in addition to collecting and preparing forestry statistics, to publish and distribute them.

From the point of view of assuring that the new Forestry Authority should have expert guidance in inaugurating and formulating its forest policy, the acceptance of Sir Philip Magnus's amendment with reference to the inclusion of expert scientific opinion on the Commission is of the very first importance, for on that member will lie a heavy responsibility. It is to be hoped that in his selection the Commissioners will make every effort to secure a man of recognised scientific attainments and merit, who at the same time possesses a wide knowledge of up-to-date forestry methods as existing in the different forestry services in the world. The appointment will not be an easy one to fill.

To those acquainted with the requirements of a truly scientific forestry department, the setting up of which is arrived at in this country, Sir Philip's other amendment, with reference to the publication of forestry statistics, which was also urged by the British Science Guild, is of not less importance. The publication of the material collected in proper form—that is, in a form which shall comprise the issue of that collected in a separate series of publications, some for the scientific reader, and others for the lower grades of a forestry service and for laymen—is a matter of supreme importance. This importance is accepted by the man of science without question, but to the public the value of such reports is not self-evident. In this respect, therefore, the House of Commons is to be congratulated on possessing at least one Member having the knowledge and foresight to recognise the vital necessity of assuring that this aspect of the question is safeguarded, and to be an advocate of scientific interests generally. After passing through Committee the Bill was read a third time.

NOTES.

THE following names appear in the deferred list of honours in connection with the King's birthday, which was published yesterday:—Viscount Iveagh, chancellor of Dublin University (promoted to an earldom); Lt.-Col. H. G. Barling, vice-chancellor of Birmingham University, and Mr. C. H. E. Chubb, donor to the nation of Stonehenge (baronetcies); Dr. R. C. Brown, founder of a scholarship for research at Cambridge University, Prof. W. Boyd Dawkins, F.R.S., and Mr. J. Y. W. MacAlister, president of the Library Association and secretary of the Royal Society of Medicine (knighthoods).

THE Pontécoulant prize of the Paris Academy of Sciences has been awarded to Prof. A. S. Eddington for his work on astronomical research.

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AN important demonstration in wireless telephony was given by the Royal Air Force in the Houses of Parliament on Monday, August 11. So far as can be judged from the Press accounts, the demonstration was entirely successful, over a range of twenty miles. General Seely explained that the Air Force took up the subject of wireless telephony early in 1915, and by March, 1918, the first two squadrons of aeroplanes had been fitted with the apparatus, which gave them such an advantage that it was found that German machines took care to avoid them. The postal aeroplanes, such as those plying between Kenley and France, are now so fitted. Ranges of 100 miles from an aeroplane and of 165 miles from an airship have been obtained, and could be increased by the use of larger aerials at the receiving stations, if any good purpose would be served thereby. Improvements still remain to be effected, such as the elimination of the trailing aerial on the aeroplane, and of the need of switching over between sending and receiving, which makes the interchange of conversation not quite so easy as it is with an ordinary telephone. Another part of the demonstration concerned direction-finding by wireless for the navigation of aircraft. For this purpose the aerial in the aeroplane takes the form of a coil of wire mounted on a rectangular frame about 4 ft. high and 3 ft. wide, which can be turned on a vertical axis, and the variations in the strength of the signals as this is turned round enable the direction of the sending station to be located. A coil of this kind was on view, and by its aid signals were picked up from the Eiffel Tower, a portion of a message received announcing itself as being an "order particularly for Budapest." An inter-communication telephone was also shown by General Seely. Worn on the neck of a member, with a wire-connection down the trouser-leg, it would enable him to speak to all the world.

IN a letter published in the *Times* of August 4 Prof. Karl Pearson directed attention to the serious financial difficulties of the Galton Laboratory. Owing to the war the equipment of the buildings provided for the housing of the laboratory staff was not proceeded with, and the institute was used as a military hospital. Now, owing to the rise in prices, not only will the equipment cost from two to three times as much as it would have done in 1914, but the slender endowment is quite inadequate to defray ordinary establishment charges, the cost of printing, and the provision of a living wage for the staff. Prof. Pearson writes:—"The Biometric and the Galton Laboratories were the first of their kind to be established; they no longer stand alone. The United States have their professors of biometry and their eugenics laboratories backed by funds which we cannot hope to rival. Why is it that Britain so often starts the new idea but leaves it to fructify in other lands? Especially important at the present moment is the field of activity for our science. The war has brought many problems to the fore; eugenical research has much ground to make up, and most serious questions as to national efficiency are demanding scientific treatment." This reasoning is cogent, and it will be a serious scandal if the Galton and Eugenics Laboratories are starved. The enlightened patronage by the State of research institutes maintained in connection with universities is nearly always a better method of promoting the true interests of science than the segregation of research workers in State Departments out of touch with the general developments of academic thought.

WE regret to have to record the death, at the early age of forty-three, of Prof. George Stephen West, holder of the chair of botany and vegetable physio-

logy in the University of Birmingham since 1909. Prof. West's work in algology has a world-wide reputation, and under him the botanical department of the University had reached the first rank for the study of this branch of botany. His death while still a young man not yet at the zenith of his power is an irreparable loss to the University of Birmingham, and deprives the world of a botanist of first-rate ability, whose recent work on the algæ of the soil opens up a new field of investigation the economic importance of which is likely to be far-reaching. Prof. West was an indefatigable worker and an admirable director of research, admired and warmly appreciated by his students and colleagues. Though robust in appearance, he had recently been in indifferent health, and an attack of pneumonia ended fatally on August 7. He leaves a widow and two children.

THE death is announced, on August 8, at the age of eighty-five years, of Prof. Ernst Haeckel, of the University of Jena.

By the death of Mr. Andrew Carnegie, on August 11, in his eighty-fourth year, a romantic career was brought to a close, and the world lost probably its most generous contributor towards the promotion of science, education, art, and other objects, for Mr. Carnegie held strongly that the possession of wealth carried responsibilities, and that "surplus wealth was a sacred trust which its possessor was bound to administer in his lifetime for the good of the community." He held that "it is a crime to die rich." Acting on these principles, he set himself to disburse his immense fortune to further enterprises which appealed to him. How much he distributed is not known, but in 1908 it was estimated that he had given more than 57,000,000*l.* in America, more than 7,000,000*l.* in Great Britain, and 1,000,000*l.* in Europe. Among his gifts may be mentioned 5,000,000*l.* to the Carnegie Institution of Washington, 2,000,000*l.* to inaugurate the Carnegie Institute at Pittsburgh, 2,000,000*l.* towards university education in Scotland, 50,000*l.* to the University of Birmingham, and, it is estimated, 10,000,000*l.* towards libraries alone. He also purchased the famous library of the late Lord Acton, which, through Viscount Morley, is now the property of the University of Cambridge. Mr. Carnegie was Lord Rector of St. Andrews University in 1903-7 and of the University of Aberdeen in 1912-14, and was the recipient of the honorary degree of LL.D. from the University of Cambridge.

THE death is announced of Mr. Herbert Ward, a traveller in many lands and a member of the rear-guard of Stanley's Emin Pasha Relief Expedition.

MR. CARLE SALTER, of the British Rainfall Organisation, has been awarded the premium of the president of the Institution of Water Engineers for his paper on "The Relation of Rainfall to Configuration," which was read before the institution in December last.

DR. SHAIFFER, of the University of Toronto, has been appointed expert in animal husbandry to the Government of Mysore. He will work under Dr. Coleman, the director of agriculture.

A DEPARTMENTAL Committee has been appointed by the President of the Board of Trade to investigate and report upon the present position and economic possibilities of non-ferrous mining in the United Kingdom, and to make recommendations as to such Government action as may be expedient in regard thereto. The members of the Committee are Mr. H. B. Betterton, M.P. (chairman), Mr. H. F. Collins, Mr. J. Harris, Dr. F. H. Hatch, Sir Lionel Phillips, Bt., Mr. R. A. Thomas, and Mr. James Wignall,

M.P. All communications should be addressed to the secretary, Mr. W. Palmer, Gwydyr House, Whitehall, S.W.1.

WE are asked to announce that the time for accepting entries for the Cammell Laird scholarship in naval architecture and the Parsons scholarship in marine engineering of the Institution of Naval Architects has been extended to August 31. Application forms may be obtained from the secretary, Institution of Naval Architects, 5 Adelphi Terrace, Strand, W.C.2.

As already announced (*NATURE*, July 10, p. 370), the Royal Society will in the coming autumn elect to two John Foulerton studentships for original research in medicine, the improvement of the treatment of disease, and the relief of human suffering. The latest time for the receipt of applications (which should be addressed to the Assistant Secretary of the Royal Society, Burlington House, W.1) is October 31.

A WAR section of the Royal Society of Medicine has recently been formed having for its object the dealing with questions affecting medicine and surgery in the Navy, the Army, and the Air Force. The first meeting of the section will be held on Monday, November 10, when the president, Sir Robert Hill, Medical Director-General, R.N., will give an address.

LORD WEIR has consented to open an Exhibition of Shipping, Engineering, and Machinery which is to be held at Olympia for three weeks, beginning on September 25 next. It was to have been held in 1914, but was postponed in consequence of the war.

A MEMORIAL tablet to Sir Walter Raleigh—the gift of the Société Jersaise—has been placed on the wall of the States Chamber of Jersey, Sir Walter having been Governor of the island from 1600 to 1603. In unveiling the tablet the Bailiff of Jersey said that of all the distinguished men who had been connected with the Channel Islands none had been more remarkable than Raleigh, who was one of the group of Devon men who had conceived the magnificent idea of the British Empire.

THE Department of Mines and Industries of the Union of South Africa is requiring the services of a scientific officer for the Fisheries and Marine Biological Survey of the South African coast. The duties of the officer will be to superintend operations, chiefly on board surveying vessels, connected with sounding, dredging, trawling, physical observations, the pressing of specimens, etc. Applications should be sent, in duplicate, not later than September 15, to the High Commissioner for the Union of South Africa, 52 Victoria Street, S.W.1.

THE Government has issued as a White Paper (Cd. 280, 1919) a report on the food conditions in Germany by Prof. E. H. Starling, supplemented by memoranda on agricultural conditions and statistics by Messrs. McDougall and Guillebaud. Prof. Starling shows very clearly that the chief cause of the collapse was a food policy erroneous in principle and unworkable in practice. So late as 1917-18 the total available food, after meeting the needs of the Army, would, if equally divided, have sufficed to provide 3000 Calories per average man; but, owing to failure to control producers, the distribution was altogether inequitable. The producers continued to consume their pre-war ration, nearly 25 per cent. of their disposable surplus was estimated to be distributed by illicit trade—to the advantage, of course, of the wealthy—and not more than 1500 Calories were left to be distributed as the average ration per man per

day. The result was that the brunt of the suffering had to be borne by the working-class and middle-class urban populations. Prof. Starling finds that the conditions are grave. Even under the most favourable conditions, and "if Germany is treated by the world as a sick child to be nursed back to health, it will take one, and perhaps two generations before she can recover her previous efficiency. After that, whether she is a danger or not to Europe depends on her Government. Her docile and industrious people are, at any rate, sickened of war, and represent no longer any active menace to the people of Europe." It appears that if Germany is to be in a position to utilise her full working capacity, she will need during the coming year imported food amounting to about a quarter of that normally imported into the United Kingdom.

At the invitation of Sir Robert Hadfield some 200 representatives of the firm of Messrs. Hadfields, Sheffield, including directors, members of the technical, financial, and commercial staffs, the research department, managers, foremen, workmen, and boys, visited London recently to inspect the British Scientific Products Exhibition, at the Central Hall, Westminster, and the Science Exhibition, South Kensington. At a luncheon at the Central Hall Sir Robert Hadfield, who presided, said he was far from being a pessimist at the present time. Naturally the workmen, owing to higher prices prevailing, wanted higher wages. What was wanted was the exercise of more patience on both sides, and the recognition of the fact that the best way to gain one's ends was by the constitutional method of Parliament. That was the method which would, he was sure, commend itself most to the British working man. Sir Richard Gregory, chairman of the organising committee of the British Scientific Products Exhibition, said that the lesson to be learned from the exhibition was that modern civilisation demanded progressive work from science and from industry. After lunch a visit was paid to the Science Museum at South Kensington, where the party was joined by Prince Albert, who spent half an hour with them in looking over the exhibits. The Prince, who is chairman of the Industrial Welfare Society, expressed his pleasure at meeting such a happy lot of workers, and said he would be very glad to receive a copy of the essay which won the prize offered by Sir Robert Hadfield to the boy who wrote the best account of his visit to London.

KILDARE, the site of the nunnery of St. Brigid, was undoubtedly in pre-Christian times the site of a fire and solar sanctuary, and the traditions of the older establishment have in more than one respect coloured those of the later. In *Man* for August Prof. R. A. Macalister quotes an early story about Dar-Lughdach, a pupil of St. Brigid, who was smitten by unholy love for a man. An angel warned her in a dream to fill two shoes with hot coals and to walk shod therewith. The fire extinguished her ardour, and St. Brigid blessed her feet and the burns were healed. Prof. Macalister suggests that this legend is a tradition of the practice at pagan Kildare of the rite of the fire-walk. Starting with fragmentary recollections of a woman who walked on fire with unhurt feet, the legend would naturally assume its present form. The name of the heroine means "Daughter of Lugaid," but it is highly probable that this is a perversion or a by-form of Dar-Luga, "Daughter of Lug," the sun-god.

UNDER the title of "A Brief History of the Study of Greek Vase-painting" Mr. S. B. Luce, in the NO. 2598, VOL. 103]

Proceedings of the American Philosophical Society (vol. lvii., No. 7, 1918), gives a useful summary of what has been done to elucidate the subject. A valuable addition to his paper is a classified list, by countries, of museums containing collections of vases, with accounts of the catalogues which have been issued. A study of this will probably lead to the discovery of other smaller collections which deserve attention, and will stimulate the curators of museums containing uncatalogued collections to supply the want.

IN the Report for 1918 on the Lancashire sea-fisheries laboratory at the University of Liverpool and the sea-fish hatchery at Piel, Prof. Herdman, Mr. Andrew Scott, and Miss H. Mabel Lewis give a short account of their intensive study of the marine plankton around the south end of the Isle of Man. One conclusion, they state, is becoming clear from the accumulated observations of the last ten years, and that is the surprisingly small number of different kinds of organisms which make up the bulk of the plankton that are of real importance in regard to fish. Seven genera of diatoms and six species of copepods are named in this connection, and particular attention is directed to one of the copepods, *Temora longicornis*, which was found in 1917 to be related definitely to the summer herring fishery off the Isle of Man. To the same report Dr. Johnstone contributes a summary of his investigations into the dietetic value of sprats and other clupeoid fishes, including a short discussion of the nature of the "maturation" which takes place when pilchards, herrings, sprats, etc., are "processed and packed à la sardine." When newly packed the bones are not softened, and the taste and smell not those expected; the ripening is the result of allowing the tins to stand unopened for a period of six months to four years, during which the fish continually improve in flavour and the bones become softened. Apparently nothing is known as to the nature of this maturation process, but bacterial action can be excluded. Dr. Johnstone suggests that it may be a process of autolysis due to specific intracellular enzymes normally present in the flesh of the fish, but on chemical examination the amount of amino-acids—which would be formed on the partial splitting of the protein—was found to be negligible. Further investigation is required to elucidate the nature of the process.

PROF. ARTHUR THOMSON gives an account (*Journ. of Anat.*, vol. liii., pts. ii. and iii., 1919) of his observations on the maturation of the human ovum, and holds that there is distinct evidence of the first and second polar bodies being given off while the egg still lies in the ovary within the discus proligerus of the Graafian follicle, and therefore before it has been subjected to the influence of the spermatozoon. This is contrary to the general rule, for in other vertebrates the sperm usually enters the egg during the second maturation division. The average size of the human ovum is, according to Prof. Thomson, 0.11×0.095 mm. (including the zona pellucida)—that is, considerably less than is generally stated.

LITTLE has hitherto been known of the Polyclad Turbellaria of the Japanese coasts, and the attention of workers on this interesting order may be directed to a paper by M. Yeri and T. Kaburaki (in *Journ. Coll. Sci. Imp. Univ. Tokyo*, vol. xxxix., December, 1918), recently received, in which are described twenty-six species referred to fourteen genera. Two new genera have been formed, and seventeen of the species are described as new. One of the latter belongs to the remarkable genus *Bergendalia*, and has the pecu-

lar duplicate male organ not connected with the vas deferens.

AN article on "The Passing of the American Potash Famine," contributed by Prof. P. G. H. Boswell to the *Journal of the Society of Chemical Industry* (June 16, 1919), states that large quantities of potash will probably be delivered from Germany both to the British Isles and to America. This would seem to suggest that the new potash-obtaining methods introduced during the war are not producing sufficient supplies. In America the total production of potash for 1917 was 50,000 tons, against 230,000 tons imported before the war. Just before the National Exposition of Chemical Industries, held in New York in September, 1918, Russian potash was being used to some extent by the chemical industry, and in large quantities by the glass industry. This potash was obtained from sunflower plants, which were the chief source of fats for the South Russian peasantry. At first it realised as much as 90 cents per lb., but now it is sold with difficulty at 15 cents. Only a small quantity of this supply was permitted to be exported to Britain, until the restrictions were removed shortly before the armistice, when, too, our own supplies were better because of the new recovery process from blast-furnace flues. The greater part of the potash imported in the United States was used for fertilising purposes, and this is thought to have been the result of German propaganda work. Obviously the poor, sandy soils of northern Germany and our own much cultivated, and consequently exhausted, soils need potash far more than do the practically virgin soils of America. It is therefore probable that America will in future use far less potash for fertilising purposes, and, in consequence, the world's demand for potash will be much more easily satisfied.

THE microscopic structure of coal has been a matter of scientific interest for the best part of a century, but it was in the year 1854 that the study was started with fresh vigour by Prof. John Quekett. Again in 1870 the subject was revived by Prof. Huxley in his article on "The Formation of Coal," and since then it has been approached from time to time, almost always with regard to its vegetable contents, and some papers by J. Lomas and others are still fresh in our minds. A paper recently published by Dr. Marie C. Stopes on "The Ingredients of Bituminous Coal" (*Proc. Roy. Soc., B*, vol. xc., p. 470, 1919) led one to expect some further light upon the botanical side of the question, but this paper attacks the problem from an entirely different point of view. "Coal is a rock," the author says, and may be studied in the same way that petrologists work at other rocks. The general structure of coal as seen in sections is described, and the three layers hitherto generally recognised are pointed out; but the bright layer is now divided so that there are four kinds of substance, for which names are proposed. Some account is also given of "The Behaviour of the Four Ingredients with Certain Chemicals."

MR. J. MORRISON puts forward a new view in a paper on "The Shap Minor Intrusions" (*Quart. Journ. Geol. Soc.*, London, vol. lxxiv., p. 127, 1919) to account for the presence of corroded crystals of orthoclase and quartz in a magma of basic character. He suggests that differentiation into a granitic type above and a more basic type below occurred in a large body of molten rock, and that the crystals, as they developed in the upper levels, sank through the mass until they became incorporated in the basic portion, from which

they could not have separated by ordinary processes of crystallisation during cooling.

MESSRS. E. T. WHERRY and E. Q. Adams ("The Classification of Mimetic Crystals," *Journ. Washington Acad. Sci.*, vol. ix., p. 153, 1919) endeavour to get rid of the indefinite prefix "pseudo" in mineralogy, when a mineral crystallises in a form closely resembling that of a system other than its own. They describe quartz, for example, not as pseudo-hexagonal, but as cryptotrigonal and phenohexagonal, and other terms are introduced for cases where crystals compounded by twinning produce forms simulating a foreign degree of symmetry.

THE *Annales* of the National Observatory of Athens (vol. vii., 1916) contains several papers by Prof. D. Eginitis and Messrs. E. Goulondris and N. Critikos on earthquakes in Greece during the years 1912-14. The total number of shocks recorded is 1366, giving an unusually high annual average for so small a country. Two destructive earthquakes (on January 24, 1912, and October 17, 1914) were felt over the greater part of Greece and ruined many places, the one in the south-east of Cephalonia and the north of Zante, the other in and around Thebes. Both occurred without any warning fore-shocks, and were followed by a large number of after-shocks (the Thebes earthquake by 712 within a year), several of them strong enough to add to the ruin wrought by the principal shocks. On November 23 and 27, 1914, and January 27, 1915, destructive earthquakes were felt in western Greece and the Ionian Islands, the epicentres being respectively near the south-east and north-west coasts of Santa Maura and the north-west coast of Ithaca. In a general discussion Prof. Eginitis states that, of the earthquakes registered at Athens from 1900 to 1914, 733 occurred during the night (6 p.m. to 6 a.m.) and 611 during the day; but he suggests that to prove the greater night-frequency, a longer series of records would be required.

THE strong earthquake which disturbed the Midland counties on January 14, 1916 (*NATURE*, vol. xcvi., 1916, pp. 572, 601), is described by Dr. C. Davison in the *Geological Magazine* for July (vol. vi., 1919, pp. 302-12). The earthquake occurred at 7.29 p.m., and was sensible over an area of about 50,200 square miles. It originated in two distinct foci, one about two miles north-east of Stafford, and the other about one and a half miles north-west of Eccleshall, the distance between them being eight or nine miles. The vibrations from the two foci coalesced along a narrow band crossing between them and at right angles to the line joining them. As this band is slightly concave towards the west, and lies nearer the western focus, it follows that the eastern focus was first in action, and that the impulse at the western focus occurred before the vibrations from the other had reached it. The earthquake was thus a twin earthquake. The relations between the Stafford earthquake and the twin earthquakes of Derby in 1903, 1904, and 1906, and those of Leicester in 1893 and 1904, are considered, and it is suggested that the crust at some depth must be corrugated in two systems of perpendicular folds about seventeen miles in wave-length.

Le Temps of August 27, in an article on the newly founded Institut d'Optique, gives some interesting figures on the growth of the optical industry in France during the war. These indicate that the output of instruments suitable for military purposes increased about ten times between 1914 and 1918. The supplies of optical glass did not present so great a cause for anxiety as in this country, for before the war, with

three optical glass factories in operation, the supplies were more than adequate for their domestic requirements. The output increased from 4000 kilos. a month in 1914 to 12,000 in 1918. The claim advanced in the article that this represents 80 per cent. of the total Allied production can scarcely be correct, as our own output during 1918 probably exceeded 9000 kilos. a month. Like ourselves, France was largely dependent before the war on German sources for supplies of the higher grades of optical instruments. She is determined that this position shall not recur, and has taken steps not only to safeguard her own supplies, but also to secure a share of the world market. As a means to this end, the Institut d'Optique, providing for higher instruction in optics, research and testing laboratories, as well as for the training of skilled glass workers and mechanics, has been founded. As the head of the institute she has been fortunate enough to secure Prof. Fabry, for whom it is proposed to create a chair of optics at the Sorbonne. The institute aims at fulfilling for the whole French optical industry the functions which, in Germany, the special technical staffs exercise for their own firms. The institute will receive annual subsidies from the Ministries interested in its work.

THE question is frequently raised in connection with the use of aluminium and its alloys whether they can be satisfactorily soldered; and, if so, by what method and with what metals and alloys. Aluminium and, to a less extent, its alloys can be welded quite satisfactorily by the oxygen-gas process, but often it is not desirable to heat the parts to be joined to the relatively high temperature necessary to weld them in this manner, owing to the resultant distortion of the parts, and a means of joining it at lower temperatures is sought. The U.S. Bureau of Standards accordingly, in its Circular No. 78, gives an account of special tests recently made at the Bureau to determine the general trustworthiness of aluminium solders. The most common of these consist of tin as a base, with the addition of zinc and aluminium, and sometimes lead, in moderate proportions. These metals and their combinations are electrolytically electro-negative to aluminium. A soldered joint is, therefore, rapidly attacked and disintegrated when exposed to moisture. There is no solder of aluminium of which this is not true. Such joints should, therefore, never be made unless they are to be protected against corrosion by paint or varnish. Solders are best applied without a flux after a preliminary cleaning and tinning of the surfaces to be soldered. The composition may be varied within wide limits. It should consist of a tin base with the addition of zinc or both zinc and aluminium, the chief function of which is to produce a semi-fluid mixture within the range of soldering temperatures. The tensile strength of a good aluminium solder is about 7000 lb. per sq. in. There is no reason why it need be brittle, as several commercial varieties are, and it is very undesirable that it should be. Its strength depends upon the type and workmanship.

IN consequence of the increased cost of production, the published prices of the *Observatory* and the *Companion* are to be raised to 1s. 6d. and 2s. 6d. respectively, beginning with the new volume.

THE Wireless Press, Ltd., will shortly begin the publication of a new monthly periodical entitled the *Radio Review*, which will be devoted to the scientific development of radio-communication and contain a review of all current wireless literature.

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OUR ASTRONOMICAL COLUMN.

KOPFF'S PERIODIC COMET (1906 IV.).—This comet, an observation of which by Dr. Wolf was announced last week, has since been photographed at Algiers on August 4, and at Greenwich on August 6 and 7. In default of an ephemeris, an approximate place for a few days may be inferred from these observations:—

	G.M.T.	R.A.	S. Decl.
	h.	h. m. s.	°
July 30	... 10	19 27 12	9 32
August 4	... 10	19 26 32	9 57
6	... 10-6	19 26 24	8 57.1
7	... 10-6	19 26 23	8 53.2

The comet was said to be of magnitude 10.5 on July 30, and 11.0 on August 7.

MAGNITUDE OF NOVA AQUILÆ.—The *Astrophysical Journal* for June contains a series of measures of the brightness of this star made by Mr. Stebbins and Mr. E. Dershem with the photo-electric photometer between June 9 and December 10 of last year, on seventy-eight nights in all. Noting the precision of the instrument, for the probable error of one observation is said to be of the order of a hundredth of a magnitude, this series might be accepted as standard. It shows an almost uniform decrease in the light of the star until June 30 to mag. 3.3. There was an increase of 0.2 mag. between the nights of July 1 and 3, a similar increase between July 22 and 27, and an outburst measured by 0.7 mag. between August 5 and 6. Later dates when the brightness increased were September 1-5 (0.4 mag.), September 19-21 (0.2 mag.), October 6-12 (0.3 mag.), and, except for these, the fall of brightness was slow but uniform until December 10, when the magnitude was 5.67. The authors say that they were disappointed not to detect any rapid changes of light. Although the measures often extended over four or five hours, there was only one night (June 10) when a variation so large as 0.10 mag. could be established, and the measures do not show any sudden and erratic variations in the course of an hour or so. It would, indeed, have been interesting if the large outburst between August 5 and 6 had happened in the course of an evening's observations. Most of the increases above mentioned have been recorded in other series of observations.

MASS AND MOMENTUM OF STELLAR SYSTEMS.—A memoir of the College of Sciences of the Kyoto Imperial University (vol. iii., No. 7, August, 1918) is useful, since it gives collected lists of binary and multiple stellar systems, with the determined elements of the orbits and the adopted parallax. From this data the authors, Messrs. Shinjo and Watanabe, have found that for all double and multiple systems the mass is of the same order of magnitude, being in the mean about one and a half times that of our solar system. For spectroscopic binaries of the A type the mass is found to be only slightly larger, but four spectroscopic binary systems of the B type have in the mean a mass twenty times that of our system. A similar research by Prof. Aitken recently showed that the visual binary systems were about twice as massive as our sun, and suggested that stars of classes K and M are less massive than those of classes A to G. The authors of the memoir now before us computed also the angular momenta of the systems, and found that, on the whole, this is of the same order of magnitude for all visual systems, being more than a hundred times that of our solar system. That the masses of the celestial bodies are, approximately, of about the same order of magnitude has already been